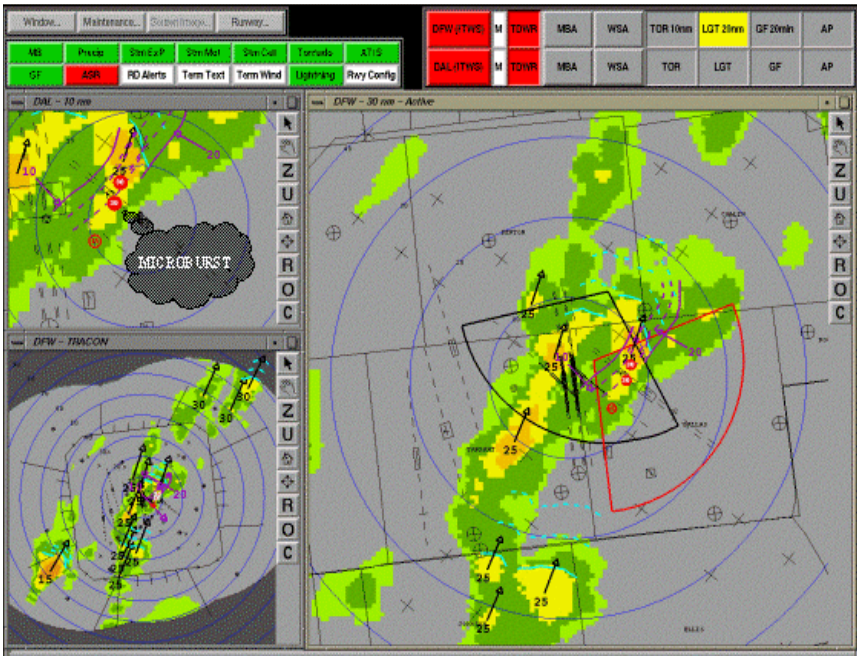
AW-3: Reconfigure Airports Efficiently

Timely planning and coordination of configuration changes during changing weather conditions.



Background

Significant changes in wind direction over airport runways, or the onset/end of hazardous weather in the airport environment, often require changes to the airport departure and arrival configurations. Weather changes can result in a significant disruption of traffic flow if knowledge of the required changes are not known in advance. With this understanding, the FAA is deploying systems that will assist users to make better informed decisions to minimize disruption to traffic flow while maintaining safety integrity of the system.

Operational Change Description

Advance knowledge is acquired through improved weather observations in the 3-d airport terminal environment out to 60 miles from the airport, and through improved weather prediction tools. Traffic flow reconfiguration can be proactively planned and coordinated between traffic flow management personnel in the TRACON, ARTCC and ATCSCC, and dispatchers in AOCs with improved weather observations and predictions. The result will be a much smoother reconfiguration, optimization of traffic flow and less congestion at the airport. There are two areas of operational impact addressed below:

- AW-3.1: Improved configuration coordination with facilities and carriers.
- AW-3.2: Improved procedures for adjacent airport coordination.

Benefit, Performance and Metrics

- Optimize the traffic flow patterns of aircraft inbound to the airport and outbound from airport. 28,000 hours delay savings at JFK alone since 1998 with pre-production prototype ITWS.
- For inbound aircraft, reduce upstream holding patterns and departure airport holds.
- Reduce ground control congestion caused by having to redirect departing aircraft to the opposite end of the runway. Expect 7- to 15-minute improvement in reestablishing runway flows after severe weather runway changes.
- Reduce gate holds and stops freeing gates for inbound aircraft.
- Significant safety benefits resulting from the integration of weather information and wind shear alerting.

AW-3.1 Configuration Coordination with Facilities and Carriers

Scope and Applicability

Currently, Newark, LaGuardia, JFK, Dallas-Fort Worth, Memphis and Orlando are using pre-production prototype ITWS systems for facility and carrier configuration coordination. Additional systems will be installed at Kansas City and Houston airports in a limited deployment acquisition this year. The remainder of the deployment schedule for full production and pre-planned product improvements is in the ITWS Program Plan. By December 2003 it is planned to have fielded 34 Product Generator ITWS Sites for 47 airports. Initial deployment of ITWS will assimilate the information from weather systems (windshear, weather radar and surface observations) in the airport terminal environment. It will provide terminal, tower, and en route TMU controllers with information on microburst prediction and thunderstorm attributes such as storm motion, precipitation type, gust fronts and surface wind patterns, many of which affect the airport configuration. External users (i.e., airline operations centers) also will have access to ITWS products. Future enhancements under pre-planned product improvement include the terminal convective weather forecast algorithm, in-flight icing product and an interface to the controller's automation system (STARS).

- Applies to high traffic (pacing) airports, particularly those airports in regions where thunderstorms frequently occur.
- Applies to the TRACON at these pacing airports, the ARTCC containing these pacing airports and ATCSCC for traffic flow management across the whole NAS.
- Applies to industry groups such as Airline Operations Centers (AOCs).

- Applies to sensor systems covering the airport terminal environment from which ITWS obtains its weather information.
- Applies to NOAA/NCEP from which ITWS obtains its gridded weather prediction data.

Key Decisions

- What level of real time collaboration is necessary between TFM and AOCs?
- Need for new procedures and training for AOCs.

Key Risks

- Commitment to adopting new procedures and necessary training for AOCs.
- Development of local procedures for coordinating the reconfiguration and traffic flow.

AW-3.2 Procedures for Adjacent Airport Coordination

Scope and Applicability

ITWS operations at New York airports (EWR, LGA and JFK) are addressing adjacent airport coordination. A number of other 34 ITWS production sites will also include multiple airport environments.

- Determine the dependencies of multiple airports on arrival and departure routes and procedures. Apply these to other multiple airport environments.
- Develop and field test strategies for use of alternate airport configurations, routes and procedures that will be necessary in specific weather situations.
- Develop efficient communication pathways for the distribution of ITWS information between the TRACON, ARTCC, ATCSCC and AOCs.
- Promote among decision makers common situational awareness of weather scenarios affecting traffic routes and potential reconfigurations.

Key Decisions

- None identified.

Key Risks

- Develop playbook set of airport configurations (multiple airports) and associated arrival/departure procedures and routes.
- Establish the planning and implementation process for changes that come about as a consequence of the playbook exercises.
- Provision of new capabilities requires procedural changes.